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ABSTRACT

In response to technological developments that are bringing about changes in the information field, this paper focuses on factors that should be considered in planning for curriculum changes in library education in the developing nations. The paper comprises information on: (1) the background of the study; (2) the importance of scientific journal literature; (3) precursors for the developing countries, including events in the publications and communications fields; (4) changes in the information profession, including the development of tools for the processing and transfer of information and the use of databases through the applications of modern technology and normative tools; (5) the need for an information policy and the integration of thought about such a policy in library training; (6) hints for educators; and (7) conclusions. A list of references is provided. (THC)

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**Current Trends in the Developed Countries
and Likely Future Developments
in Information Science and Policies**

**Suggestions for Curricula Designers in
Developing Countries**

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Background

Recently in the Anglo-Saxon countries there has been a discussion about curricula designs in the library schools. Educators as opposed to practitioners maintain that if the education should be called academic the library and information sciences must include a solid body of theories. On the other hand the practitioners maintain that the education must aim to solve practical problems and train in specific techniques. Authors such as Boyd Rayward, Blaise Cronin and Maurice Line have been active on this matter. (RAYWB4)

Many of the educators or practitioners from the developing countries may not understand that the Western countries can afford such a discussion without losing credibility about how an effective training of librarians should take place. However, that discussion may distort their apprehension of what to teach about.

In a developing country first things must come first. Although the level of development may vary between the countries, there are certain commonalities in the development process that this paper takes into account.

In a time of rapid transition towards a new technology in the information field, the establishment of a proper infrastructure should take priority. The education should therefore include essential elements for building up a proper infrastructure of the national information system. Many of the Western countries, represented in the Organisation for Economic Cooperation and Development - OECD - in the late 60's realized that information was a strategic resource. By necessity each country had to develop a national information policy in conjunction with its science and research policy.

Many of the OECD countries followed the recommendation of the organisation to set up a high-level mechanism in the government to provide for policy decisions and funding of their implementations. Even if the policy success of the COSATI committee in the United States has not been clearly discernible, such mechanisms as British Library, UK, Gesellschaft für Information und Dokumentation in West Germany, MIDIST in France, TINFO in Finland, NOBIN in the Netherlands, DFI in Sweden may be recalled. Especially, the smaller countries found it necessary to establish such a mechanisms. (-SCIE78)

Unesco took up the ball from OECD, and in its UNISIST framework it recommended the countries to establish what was called "national scientific information agencies". Last year, at the Unesco General Conference the need was expressed to balance three different components of a national information policy, namely libraries, archives and documentation services, especially because of the use of modern information technology.

Particular attention should be directed to the establishment of national information systems. However, the costs of terminals, the use of databases and the training of staff in different techniques in the three information services need government funding. What can the educators of the developing countries do about that? It is commonly believed that schools are constantly changing. The extent to which the presumed changes take place in the library schools is debatable. However, if we assume that there is space for changes in the educational programs for librarians in the developing countries, then this paper wants to show some points that could be included in a planned curriculum change.

The first thing to suggest is that the educators undertake to observe the changes going on. That can be done by observing the trends and look out for discontinuities. In order to look for future developments we have to distinguish earlier developments and identify discontinuities from which we may learn about how to modify a forecast. The state of the art in the developed countries may serve as a background for a forecast about what will happen in the developing countries. The educators have then to assess what they would like to include in their curricula in order not to be blamed for being traditionalists.

At present the libraries are at a discontinuity point which has to be carefully observed in order to arrive at a change in the curriculum from the custodian and processor like role of traditional librarianship to the special training of so called "middlemen" or "intermediaries" using modern techniques, or from book-orientation to information oriented training.

The importance of scientific journal literature.

Since the first scientific journals were innovated in the 17th century, journals in various fields have mushroomed. In 1950 the number of journals had grown to over 10 000. Today, it is estimated that there are over 100 000 scientific and technical journals in the world. In spite of the competition and the unstable economies there are evidences from certain fields that there are more journals started than terminated. During the last decade in the field of mechanics more than 100 journals have been started and only about a dozen have stopped publishing.

The fragmentation into various disciplines at an early date - reflected by the increasing numbers of scientific journals - created the need for secondary publications such as the abstract and indexing journals. From the very first abstract journal, "Pharmaceutisches Centralblatt", the number has increased steadily to several hundreds. Many of these have been transformed into databases to be searched from terminals.

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For that purpose the developed countries are now making extensive use of computers and telecommunications for searching the databases containing secondary publications. In United States the searches only in MEDLINE - the computerized version of Index Medicus - amount to over 2 Million terminal hours a year.

It is estimated that the "information industries" or the "knowledge industries" in the United States employ more than half the workforce, and that proportion will continue to grow also in other industrialized countries.

Precursors for the developing countries

Any good forecaster not only tries to extrapolate from the earlier development, but also seeks to modify his prognostication by looking for specific signs. The prudent citizen going into town in the morning takes a critical look upon the sky before choosing to take his umbrella. In the same way we may look out for so called precursor events which may tell us about possible and alternative developments. The observation of such events will change our ignorance about the future into a state of more "well-informed" ignorance. Thereby we can attach a higher probability to our forecast.

We find such precursors in the publication field. In spite of all talk about the "paperless society Year 2000" the number of primary journals are increasing in the developed countries. There is also a trend in the developing countries to publish more journal articles (CABU84 p 151). That speaks for the continuation of the printed word, because it will not be easy to make a rapid change into the egos of the researchers and scientists. They know that "publish or perish" is still valid for promotion and higher salaries. The scientific author will continue to have the desire to see his name in print, to get reprints and to distribute them between his colleagues. A sure guess is that the printed journals as we experience them, will persist during the next 16 years to come.

When we come to secondary journals and other forms of bibliographic control, we have to realize that the bibliographic activities in the developing countries are taking place in an uncoordinated manner. A national bibliography is often regarded as a luxury, and thus, it is a scarce resource, the need of which is not well understood. Instead, the systematic process of collecting, storing and disseminating the information about primary publications mostly lies outside their national borders. Because of that the industrialized countries often have more accurate and effective knowledge about the developing countries than those have about themselves. (MING84 p 81)

Many developing countries adhere to a most laborious

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method of bibliographic description in their libraries, and backlogs of uncatalogued material are commonplace. Others have realized that much of the information their users need can be retrieved simply by using a small portable computer terminal and the telephone network on a dial-up basis (SARDB1 p 53-61).

That discontinuity in traditional library services leads to imbalances, partly "caused by the uncontrolled encroachment of informatics facilities into the Third World". (IBIN84:16 p 3). Only a few developing countries have realized that there is a need for an information as well as an informatics policy as part of other government policies.

We can note other precursor events, such as the steady upward trend of the salary levels, the downward trend in the costs of hardware, software and memory storage. Even in the developing countries soon there will be a break-even point when the cost/benefits are such that it is wise to switch from paying salaries to pay for minis or microprocessors.

Another precursor is found in the communications field. Owing to the energy crisis it becomes more economic to transfer ideas and thoughts of the human minds by telecommunications means, than to transport the living bodies to conferences and meetings by air or by rail. Teleconferencing or even TV-conferencing are becoming standard patterns in many Western countries. The same goes for the transfer of information from computer to computer. Whole databases can be transferred economically over the telephone lines due to the introduction of the so called packet switched mode, instead of the traditional line switching mode, and thus, the telephone costs become distance independent, something that favours the developing countries remote from western databases.

In this time of satellites there is a marriage between three advanced technologies, namely the information technology, the computer technology and the communications technology. Experiments to transfer full documents by the use of satellite transmission at high speed are under way, e.g. the document transfer project between the American Institute of Physics and the NASA in the United States, and the ARTEMIS project carried out by the European Common Market.

Another visible trend is that bibliographic databases are supplemented by what is called factual databases. Examples are the Cambridge Chemical Structures database of organic substances, or the Mass Spectrometry database issued by the National Bureau of Standards in the United States.

Information has become a diversified commodity. Bibliographic information, abstracts etc. are mixed with pictorial and factual information carrying both quantitative and qualitative data. The information is also

carried by a multitude of media such as printed, computerized, video, holograms and microform.

Changes in the profession

There are two points of interest for those educators who are observant about the future in the Unesco Medium-Term Plan for 1984-89, namely

- the development of tools for the processing and transfer of information. The goal is to achieve compatible systems, taking into account institutional, human and financial elements, and
- the use of databases through the application of modern technology and normative tools. The goal is to develop the capacity for storage, processing and circulation of specialized information.

These points tell us that our profession will change from the hitherto book-orientation to information orientation. In many industrialized countries they donot speak only about information scientists, but also about subject specialists, such as chemists, physicists, engineers and medical doctors as belonging to the profession.

For instance, the Karolinska Institutet in Sweden employs medical doctors specialized in doing the online searches in MEDLINE for their fellow-mates in the hospitals. In the OECD Development Center, Paris, it has been recent talks about employing specialists in "social intelligence" to analyse and syntetisize information for planners and decision-makers.

If the education of librarians in the developing countries could put stress upon "journal articles rather than journals, considerable financial savings can be achieved, the social and intellectual status of the librarian can be raised rapidly through his thus enhanced ability to serve the individual physician quickly and efficiently without necessarily building a public monument for the purpose", to cite an American author who has been active in Pakistan (CHES84).

The Unesco programme "Universal Availability of Publications - UAP" will put demand upon each country to create bibliographic records of their own publications into a national bibliography or similar concepts. Emphasis will be placed upon journal articles in science and technology. Thus, we will see the emergence of national databases carrying such information.

In South-East Asia the WHO Regional office has started its own "Index Medicus for South-East Asia". As the data entry for the printed publication is made on a word processor in New Delhi, the resulting machine readable records could easily be put into a computer for online searching. However, that material will never enter the MEDLARS. Instead, it will be complementary material to MEDLINE in that region. MEDLARS will keep within its present boundaries with regard to

journal selection. But the regional database will have the advantage of referring to journals which usually are available in the region, so the doctors donot have to wait long for photocopies from the expensive medical journals from abroad.

We can, therefore, foresee what has been pointed out by an American librarian recently, namely that "cataloging and ordering librarians as we now know them will evolve to a type of specialist working in bibliographic record centers" (WILL83 p 35).

The need for an information policy.

The second important item in this paper is the need for a country to establish an information policy and to integrate thoughts about such a policy in the training.

The educators must ask themselves, who is going to tell the decision makers in government that the country needs an information policy linked to its research and development policy? The point is that the educators and the librarians are those who should knock on the doors of the decision-makers and tell them what an orderly information supply is worth as a strategic resource of the country, and why it needs an information policy.

An important fact is that the industrialized countries have recognized the need for establishing a government information policy as part of their general policy for scientific, technical, cultural, economic and societal development.

In the developed countries the traditional pattern of formal information services is based upon libraries. These are financed and controlled by the government, the local authority, publicly financed authorities such as universities, public agencies and private concerns. Almost without exception the access to these libraries is free to those who are entitled to use them, but often not to outsiders.

Insofar as information or library networks exist today within a region, they are in the main held together by informal links established through the cooperative philosophy developed by Unesco or other international organisations, namely to promote and develop national capabilities, and to stimulate bilateral and multilateral relationships between libraries in a region without their having to go through a bottleneck of a central organisation. For instance, the medical libraries in Bangkok or Caracas have no formal obligation to any user beyond their immediate clientele, and they are not intended originally to serve the general public. Therefore, a service of more nationwide or interregional nature in order to arrive at an information service to support the national development programme will need government backing.

The question arises, whether the rather informal pattern of exchange relations which have grown up based upon transfer of printed material between traditional libraries, is appropriate for a system where the information to a great extent will be stored in databases, and where networks for communication within a near future also will provide electronic facsimile transmission of full documents?

In many countries their governments have taken the responsibility for the interconnection by communications networks. However, such an interconnection must be national in scope. An early regional network, such as the EURONET/DIANE or SCANNET, becomes obsolete because of national networks coming into being using a common standard interface such as X25 and the like. The technique for packet switched networks is now well known and documented, so it is up to the national government to take decision about the implementation. The librarians should feel a professional interest in trying to influence the national policy in order to ensure that the needs of doctors, physicists, technologists, agriculturists and also decision makers for information support are adequately satisfied.

Every country has today the opportunity of access to the world body of knowledge, but it may face special problems in achieving that access. Since a developing country contributes only a very modest amount to the world information, it must pay special attention to the adaptation to local needs of the world literature in fields of interest. In its research policy it cannot ignore to take account of the world knowledge of today.

A proper investment policy for obtaining access through the information transfer systems, the purchase of terminals, the payment of intercontinental calls, and royalties to the database owners, seem unavoidable. Also the selection and adaptation to local needs may dictate substantial investments in translation and processing activities, and those will come on top of the investments to equip a few libraries and documentation centers with facilities so that they can effectively utilize the world knowledge.

However, an information policy has to be stated explicitly in a government document, because librarians and many in other fields have different expectations about what an information development program should include. Then, everybody knows what is going to be funded and implemented and what is not.

Hints for educators

The author maintains that the training, for instance, of medical doctors to use MEDLINE is an essential pre-requisite for the development of a national information system which later can be integrated with other

systems into a national and regional network. The computerization of Index Medicus into MEDLARS in the 60's set a pattern that has since been followed by most secondary services for bibliographic control of primary publications. Through information training, the professional physician and practitioner will recognize the need and value of an orderly information supply. That recognition is invaluable for the political acceptance and financial support by the government, so that a successful implementation of the national information policy can take place.

The library schools should take the lead here by offering courses to educate the future librarians how to go and call on, and train researchers in various fields in the use of online systems. The medical field is a good starting field, another is law. They should also teach their students about the necessity that a country establishes an information policy. The industrialized countries have shown that a modern society needs such a policy (OECD71). It has also been reiterated by Unesco in the UNISIST programme where the Recommendation 15 talks about the need for "national scientific information agencies"(UNES71 p 60).

Conclusions.

The present state of scientific, technical and societal development in the Third World seems to call for an explicitly stated information policy issued by their national governments. Who is going to tell the decision makers that the country would benefit from an orderly supply of information to support research and development?

It has often been said that teachers only teach what they themselves have been taught, why teaching always is obsolete in a changing environment. However, if they try to understand that the future of library services beyond "1984" definitely will change from what they have experienced, a first step should be taken to revise the curricula in order to communicate that future and to bring them up to the present state of the art. (Conf. CRON82).

The libraries of the developing countries do not need to emulate the library evolution which has taken place in the Western countries. They can "leapfrog" by using the new technical means. Being members of the academic staff in institutions of higher learning, the educators need to exploit the present circumstances by doing their own research in the rapidly changing field of library and information sciences. "The teaching factories that so many of our schools have become" (RAYW84 p 168), may thereby change into centers of excellence for national bibliographic control - a task that will be modernized by new expert system coming into use (CLAR83 and DAVI83), and for worldwide exploitation of information by training social intel-

ligence practitioners - a suitable role for future librarians.

References

- Cabutey-Adodoadji, E., Book development and publishing in Gahna: An appraisal. - Libri 34, 1984,2 p 130-155. CABU8
- Cheshier, R.G., American medical librarians and developing countries. Paper submitted for the Denver MLA Meeting, May 30, 1984. CHES84
- Clarke, A. & Cronin, B., Expert systems and library/information work. - J Librarianship 15,1983,4 p 277-91. CLAR83
- Cronin, B., The education of library and information professionals: a conflict of objectives? - ASLIB Occasional Paper no. 28. London 1982. CRON82
- Davis, R., Documents, information or knowledge? - J Librarianship 15, 1984,1 p 47-65 DAVI84
- Informatics and sovereignty. Informatics, a strategy for regional integration. Cali, Colombia, 10-12 May 1984. - IBI News1 1984:16 p 3. IBIN84
- Ming, D.C., Access to dissertations in and on Southeast Asia.- Libri 34,1984,2 p 88-112. MING84
- OECD. Information for a changing society. Some policy considerations. Rapporteur B.V. Tell. Paris 1971. 48 p. OECD71
- Rayward, Boyd W., The problem of connections: Education for and the practice of librarianship. - J Librarianship 16,1984,3 p 151-69 RAYW84
- Scientific and technical information provision in Sweden. Proposal for a new organization. Report submitted by two Swedish Government Commissions 1977. (Summary). Publ. by The Ministry of Industry and The Ministry of Education and Cultural Affairs. Stockholm 1978. 36 p. SCIE78
- Unesco. UNISIST Synopsis of a feasibility study on a World Science Information System. Paris 1971. 92 p. UNES71
- Willar, A., Will people talk to people?: A leaping look at library life in the coming generations. In:Gellatly, P.(ed.), Beyond "1984":The future of library technical services. New York 1983, p 31-36. WILL83